CDW CONSULTANTS, INC.
CIVIL & ENVIRONMENTAL ENGINEERS

November 16, 2016

USEPA Region I – New England
5 Post Office Square
Mail Code: OEP06-1
Boston, MA 02109-3912

Attn: Damien Houlihan

Re: Permit No. MA0003590: Request to Change Discharge Monitoring Location and Flowrate Monitoring
MBTA Commuter Rail Maintenance Facility: 70 Rear 3rd Avenue, Somerville, MA 02143

Dear Mr. Houlihan:

On behalf of our client, Keolis Commuter Services, LLC (Keolis), and in consultation with the Massachusetts Bay Transportation Authority (MBTA), CDW Consultants, Inc. (CDW) is submitting a request to ***change the discharge monitoring location*** for the above-referenced NPDES permit (Permit). This change is requested as a result of drainage system improvements recently completed by the MBTA as part of the Green Line Extension (GLX) project. These recommended changes have been previously discussed and inspected in meetings held with EPA, the Massachusetts Department of Environmental Protection (MassDEP), the MBTA, and Keolis on August 9, 2016 and October 12, 2016.

As noted in the MBTA's letter submitted on September 21, 2015 to EPA and via the Discharge Monitoring Report (DMR) submittals for the Permit, the GLX project included infrastructure improvements to the storm drainage system traversing the Commuter Rail Maintenance Facility (CRMF) property and discharging to the outfall at the Millers River. Per the most recent GLX project information, the watershed that contributes stormwater runoff to this storm drainage system is made of both CRMF property and other adjacent properties, and consists of approximately 213 acres of land in Somerville, Charlestown and East Cambridge, per the most recent GLX project observations. The Permit currently regulates the discharges from this outfall and requires discharge and flowrate monitoring. In consensus with the MBTA Environmental Department, the following sections summarize the current discharge monitoring location, drainage system improvements, proposed discharge monitoring location and proposed flowrate monitoring:

Permit Discharge Monitoring Location
In accordance with the Permit requirements, periodic discharge sampling (monthly, quarterly and annual) is conducted at the downstream end of the Prison Point OWS, prior to discharge into the outfall pipes (see attached sheet 000-C-2062).

Prior to the GLX project activities, the storm drainage system traversing the CRMF property flowed through the Prison Point oil/water separator (OWS) and into three 48" diameter outfall pipes, collecting the stormwater draining from the CRMF property, upstream drainage areas, and small volumes of flow

from the adjacent Northpoint development area (former Boston & Maine Corporation property) and the Gilmore Bridge, before discharging to the cofferdam outfall at the Millers River.

GLX Drainage System Improvements

A portion of the GLX project's drainage system improvements included the installation of new drain piping and drainage structures, coupled with the abandonment of existing structures that are inadequately sized or no longer necessary after this construction. This work was conducted primarily in the downstream portion of the existing drainage system, in areas located both upstream and downstream of the Prison Point OWS.

With the exception of *de minimis* quantity of stormwater from the Gilmore Bridge and the North Point area, the new drainage system no longer directs flow through Prison Point. A new 84" drain pipe directs the flow to a new drainage chamber access point, designated as **DMH 13.4** (see attached sheets 000-C-2061, 000-C-2062, and 000-C-2063). This access point is the *last available sampling location* before *all flow from the drainage area* discharges directly into the Millers River via three discharge pipes.

PROPOSED PERMIT MONITORING CHANGES

Discharge Monitoring Location

The MBTA and Keolis request to change the discharge monitoring location from the downstream end of the Prison Point OWS to the downstream end of the new **DMH 13.4** chamber, just prior to discharge into the outfall pipes. The DMH 13.4 chamber is surcharged above the outfall pipes under normal conditions. Therefore, sampling will be conducted at the approximate depth of the centerline of the outfall pipes, which corresponds to a depth of approximately 14 feet below the manhole rim (see attached sheet 000-C-8028).

Flowrate Monitoring

The Permit calls for reporting of the Monthly Maximum Daily Flow and the Monthly Daily Average Flow entering and exiting the Prison Point OWS. The MBTA and Keolis propose the use of a conservative calculation using precipitation data to estimate the flowrate in the drainage system. The maximum possible storm water runoff will be calculated based upon the drainage area, precipitation records, and estimated base flow (due to groundwater). This estimated value will be used for reporting the flowrates both entering and discharging from the system.

The flowrate calculation conservatively assumes that all of the precipitation runs off into the drainage system, using Boston Water and Sewer Commission precipitation records for Charlestown. Thus, the maximum daily precipitation for a given month will be used to calculate the *Monthly Maximum Daily Flow*, and the total precipitation for the month will be used to calculate the *Monthly Daily Average Flow*.

The runoff volume is calculated by multiplying precipitation depth times the drainage area, and converting the result to gallons. This value is based on an acre area of 43,560 square feet and 7.48 gallons of water per cubic foot. For the Monthly Maximum Daily Flow, the maximum daily runoff volume is then converted to million gallons per day (MGD) and the estimated base flow for the drainage system (3.04 MGD) is added to calculate the maximum daily flow. For example, if the maximum precipitation in a single day is 0.81 inches, the maximum runoff would be 4,684,904 gallons (4.68 MGD). Adding the base flow (3.04 MGD) to this value results in a Monthly Maximum Daily Flow of 7.72 MGD.

The Monthly Daily Average Flow is calculated in a similar manner, and the total precipitation for the month is divided by the number of days in the month to calculate the average daily precipitation. For example, if the total precipitation for a month with 31 days is 1.27 inches, the total flow volume for the

month would be 7,344,996 gallons, with the average daily flow volume as 236, 935 gal/day (0.237 MGD). Adding the base flow (3.04 MGD) to this value results in a Monthly Daily Average Flow of 3.28 MGD.

In summary, given the current improved drainage system configuration, the proposed DMH 13.4 chamber discharge monitoring location is based on an assessment of what is considered the optimal sampling location consistent with the Permit criteria. Furthermore, the proposed method for calculating estimated flowrate using precipitation data is believed to be, to the extent practicable, a conservative estimation of the flowrates entering and discharging from the system.

At this time, we respectfully request that EPA approve the proposed changes described above and discussed during our last meeting held on October 12, 2016 in order to begin the monitoring changes expeditiously.

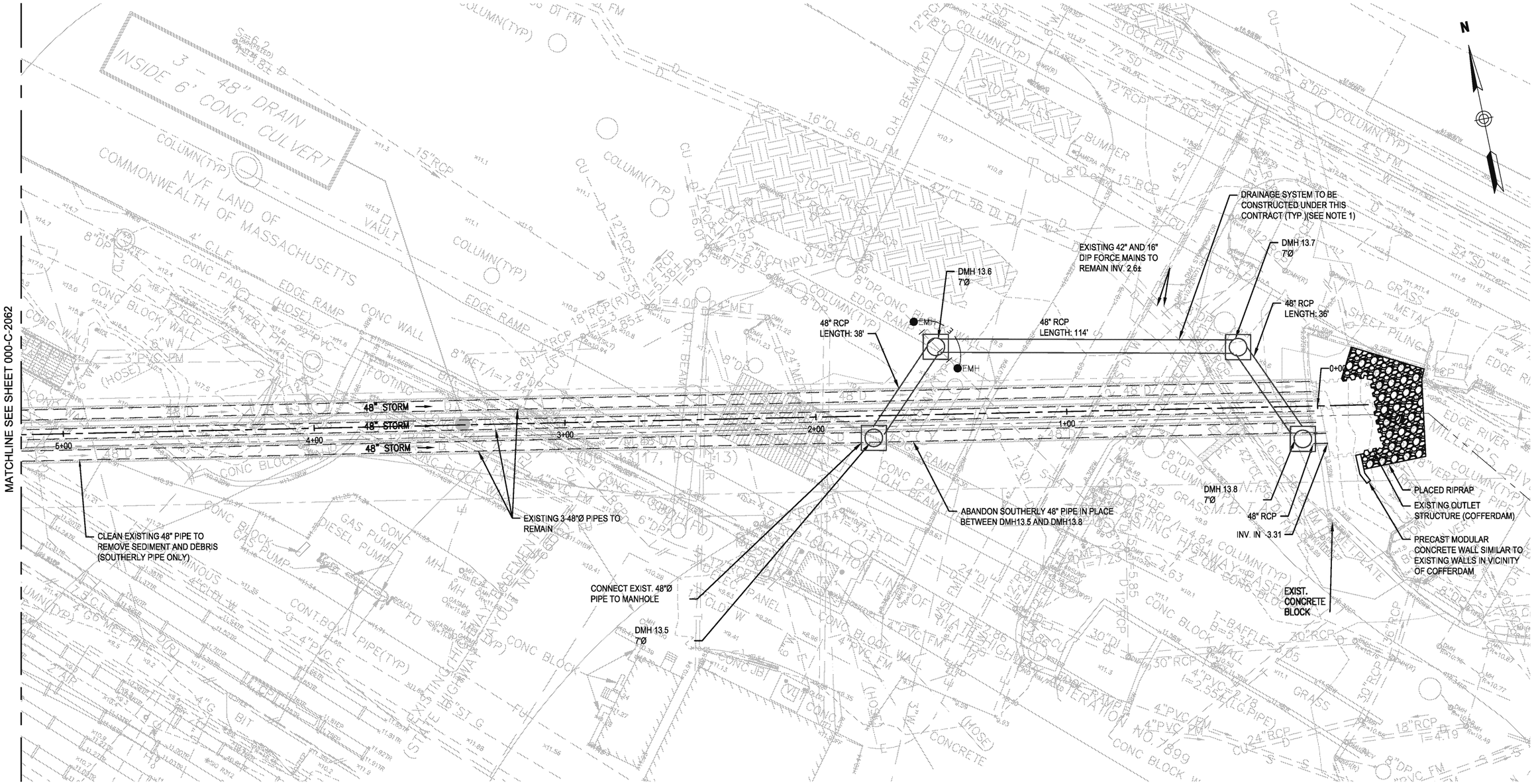
If you have any questions concerning these proposed monitoring changes, please do not hesitate to contact me at (508) 875-2657 x27. We look forward to your reply regarding this request.

Sincerely,

William J. Betters, P.G., L.S.P.
Director of Environmental Services

attachments

cc: U. Kipka, EPA
C. Vakalopoulos, MassDEP
J. Nerden, MassDEP
J. Kearney, MBTA
C. Coutu, Keolis



NOTES:

1. WHEN PRINTING IN COLOR, THIS SHEET CONTAINS DRAINAGE SYSTEMS IN RED (PIPES AND MANHOLES) TO INDICATE DRAINAGE WORK CONSTRUCTED UNDER THIS CONTRACT (IGMP-03).
2. SEE THE UTILITY PLANS FOR FURTHER DESCRIPTION OF PROPOSED UTILITIES AND IN WHICH SPECIFIC GLX CONTRACT EACH IS TO BE INSTALLED.
3. FOR DRAIN MANHOLE DETAILS SEE SHEETS 000-C-8029 AND 8030.
4. FOR MODIFICATION TO EXISTING OUTLET STRUCTURE/COFFERDAM SEE SHEET 000-C-8031.
5. FOR SPECIAL SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS FOR ALL PIPES AND STRUCTURES ON THIS SHEET, SEE SHEET 000-C-0001.

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SCALE IN FEET

JOSEPH A. CALAGIONE CIVIL No. 33676 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
09/12/14

ISSUE	DATE	DESCRIPTION	BY	CHK'D	APP.
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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

GREEN LINE EXTENSION PROJECT
MBTA CONTRACT NO. E22CN04
CAMBRIDGE/SOMERVILLE, MASSACHUSETTS

MEDFORD BRANCH DRAINAGE PLAN MILLERS RIVER DRAINAGE SHEET 1

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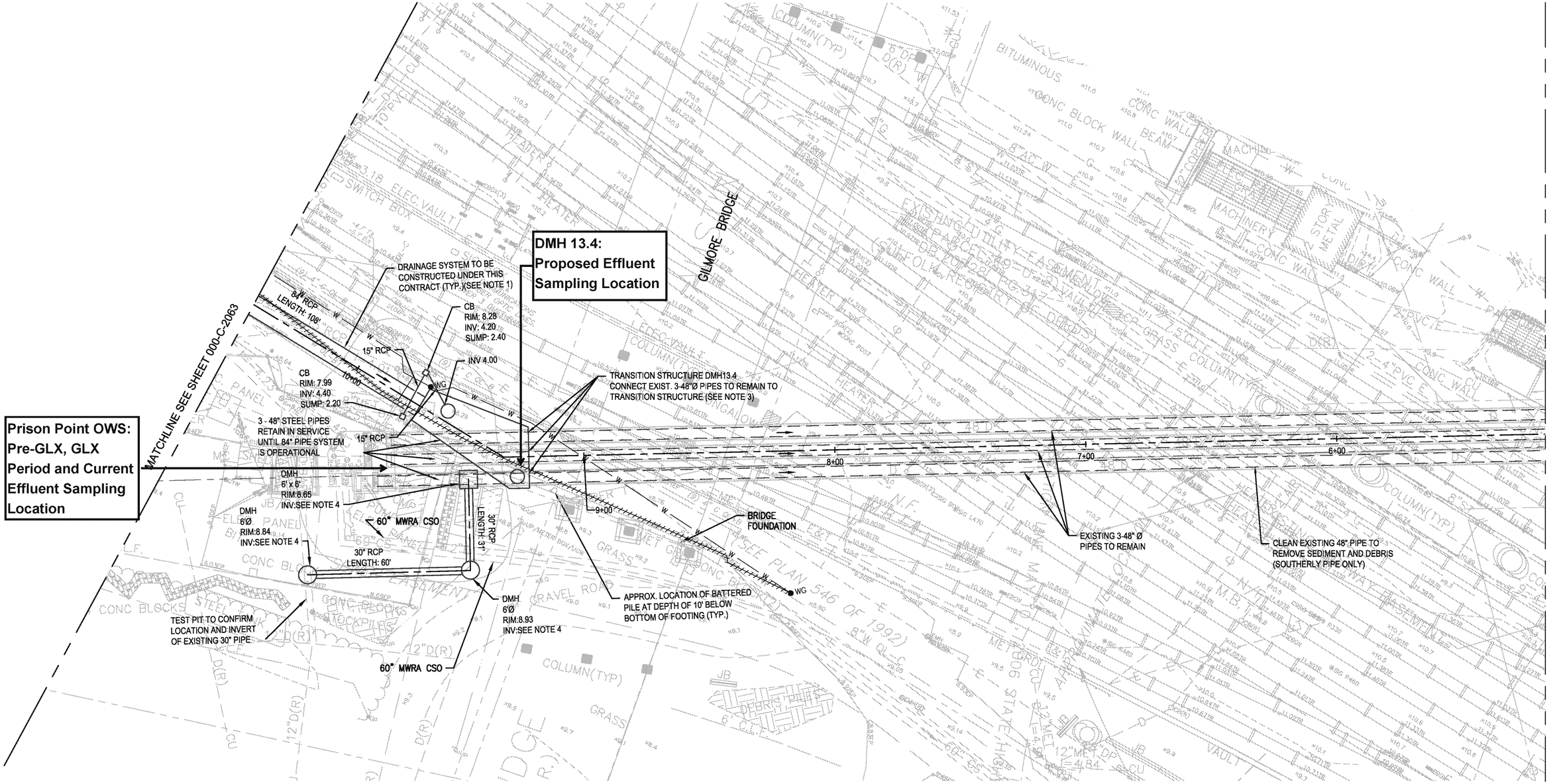

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2. SEE THE UTILITY PLANS FOR FURTHER DESCRIPTION OF PROPOSED UTILITIES AND IN WHICH SPECIFIC GLX CONTRACT EACH IS TO BE INSTALLED.
3. FOR DETAILS OF DMH 13.4 SEE DETAILS ON SHEET 000-C-8028.
4. PROFILE SHALL BE ESTABLISHED BY ENGINEER BASED ON INVERTS ESTABLISHED IN THE FIELD BY CONTRACTOR.
5. FOR SPECIAL SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS FOR ALL PIPES AND STRUCTURES ON THIS SHEET, SEE SHEET 000-C-0001.

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

GREEN LINE EXTENSION PROJECT
MBTA CONTRACT NO. E22CN04
CAMBRIDGE/SOMERVILLE, MASSACHUSETTS

MEDFORD BRANCH DRAINAGE PLAN MILLERS RIVER DRAINAGE SHEET 2

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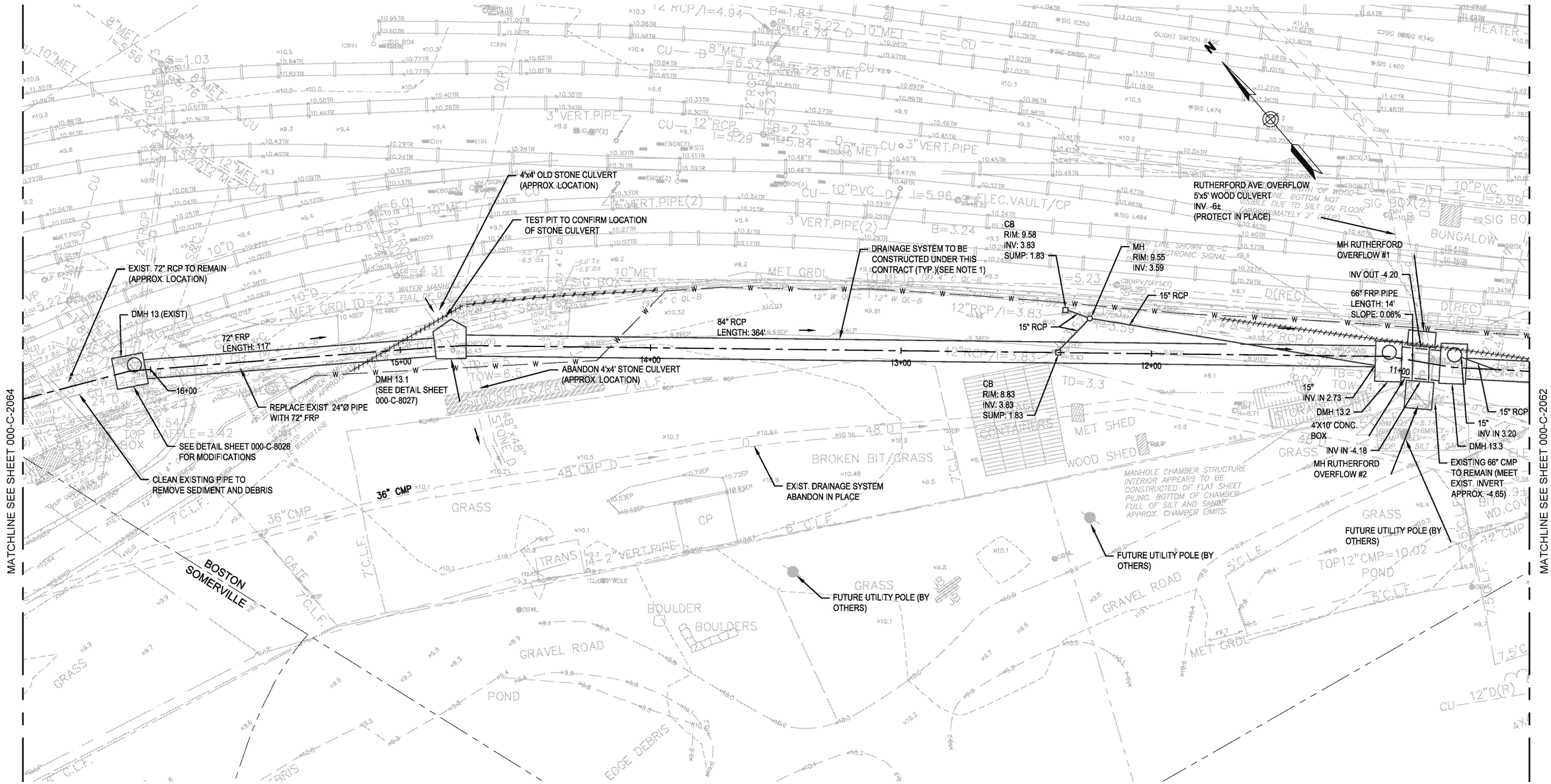

NOTES:

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2. SEE THE UTILITY PLANS FOR FURTHER DESCRIPTION OF PROPOSED UTILITIES AND IN WHICH SPECIFIC GLX CONTRACT EACH IS TO BE INSTALLED.
3. FOR RUTHERFORD AVENUE OVERFLOW MANHOLE No. 1 AND No. 2 DETAILS, SEE SHEET 000-C-8026.
4. SEE DETAILS SHEET 000-C-8027 FOR DMH 13.2 AND DMH 13.3.
5. ALL EXISTING PIPES CONNECTED TO DMH 13 SHALL REMAIN IN SERVICE, EXCEPT THE 24" PIPE TO BE REPLACED BY 72" FBERGLASS REINFORCED PIPE (FRP) AS SHOWN ON PLAN.
6. CONTRACTOR SHALL COORDINATE AND WORK WITH THE COMMUTER RAIL OPERATOR REGARDING THE REMOVAL OF STOCKPILED MATERIALS WITHIN THE WORK ZONE FOR DMH-13 AND ADJACENT AREA DOWNSTREAM.
7. FOR SPECIAL SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS FOR ALL PIPES AND STRUCTURES ON THIS SHEET, SEE SHEET 000-C-0001.

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GREEN LINE EXTENSION PROJECT
MBTA CONTRACT NO. E22CN04
CAMBRIDGE/SOMERVILLE, MASSACHUSETTS

MEDFORD BRANCH DRAINAGE PLAN MILLERS RIVER DRAINAGE SHEET 3

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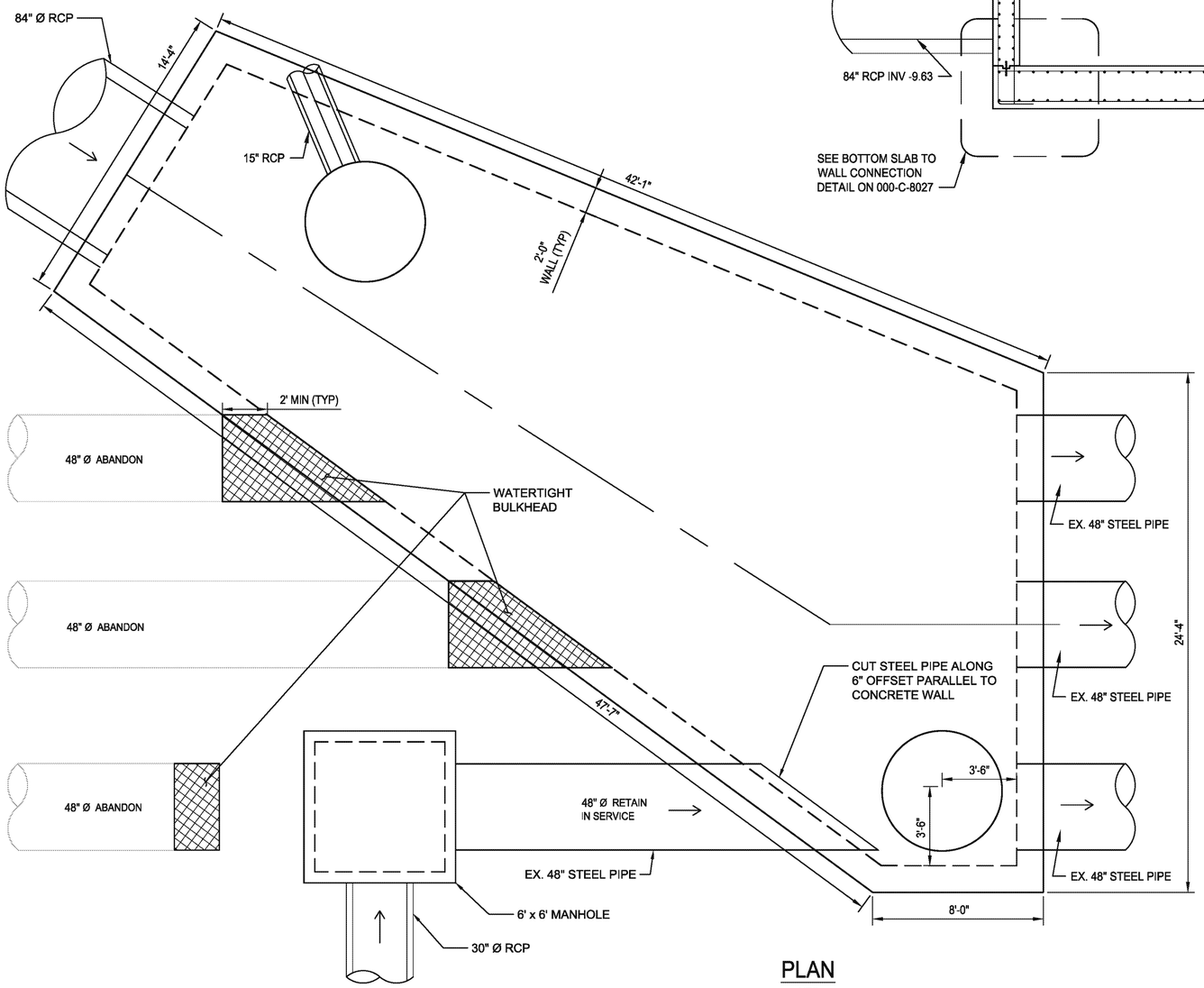
REBAR NOTES:

1. MINIMUM DEVELOPMENT LENGTH OF 28" SHALL BE MAINTAINED FOR ALL BARS.
2. MINIMUM HOOK DEVELOPMENT LENGTH OF 14" SHALL BE MAINTAINED FOR ALL HOOKS.
3. MINIMUM LAP SPLICE LENGTH OF 48" SHALL BE MAINTAINED.
4. PROVIDE 12" COMPACTED GRAVEL OR 6" LEAN CONCRETE UNDER THE BASE SLABS.
5. SHAPED INVERT CHANNEL SHALL BE PROVIDED UP TO THE SPRING-LINE OF THE LOWEST PIPE ENTERING AND LEAVING ALL STRUCTURES, OR AS OTHERWISE DIRECTED BY THE ENGINEER.
6. REINFORCEMENT SHALL NOT BE IN CONTACT WITH STEEL PIPE.
7. A JOINT SHALL BE CAST INTO THE TOP OF ALL CIP STRUCTURES TO MATCH THE BASE OF PRECAST RISER SECTIONS PER THE MANUFACTURERS RECOMMENDATIONS.
8. COVER OVER REBAR SHALL BE 2".
9. OIL RESISTANT GASKETS CONFORMING TO ASTM C-443 SHALL BE USED ON ALL REINFORCED CONCRETE PIPE, MANHOLE AND BOX CULVERT JOINTS. JOINT MATERIAL SHALL BE NITRILE OR A MATERIAL APPROVED BY THE ENGINEER.
10. SEE NOTES ON SHEET 000-C-0001 FOR SPECIAL SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS.



PLAN
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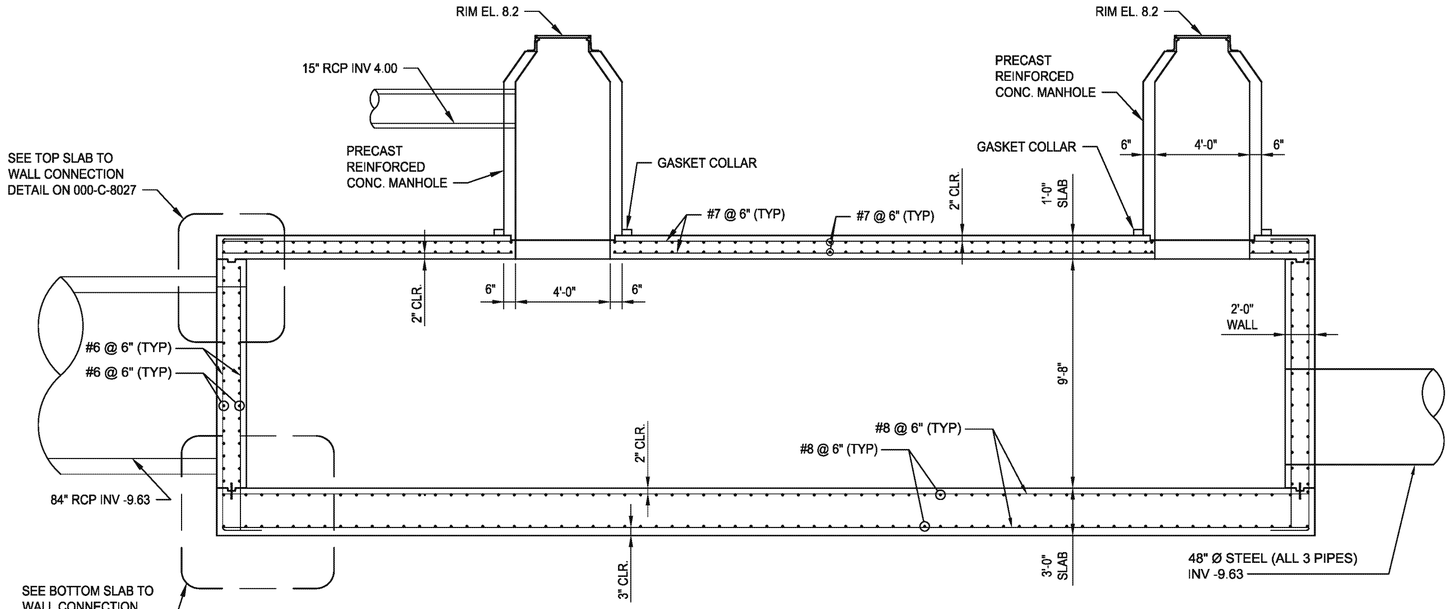

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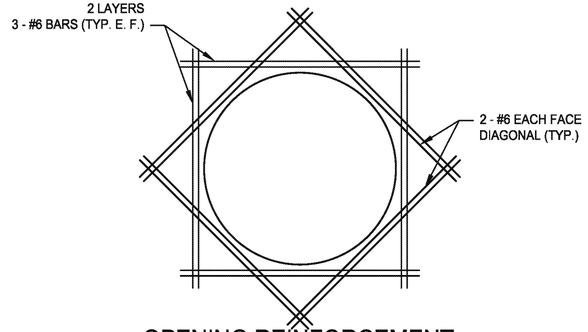

OPENING REINFORCEMENT

DMH 13.4
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JOSEPH A. CALAGIONE CIVIL No. 33676 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
9/10/14

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

GREEN LINE EXTENSION PROJECT
MBTA CONTRACT NO. E22CN04
CAMBRIDGE/SOMERVILLE, MASSACHUSETTS

MEDFORD BRANCH DRAINAGE DETAILS LOWER MILLERS RIVER DRAINAGE SHEET 3

SCALE: NTS	DRAWN BY	DESIGN BY	CHECK BY	PLAN NO. 178,690	ISSUE
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